

# NOTES ON THE BOTANY OF THE INTERIOR OF NEW SOUTH WALES.

By R. H. CAMBAGE.

(Plates xxxi.-xxxiii.)

## PART V.—FROM PARKES TO MARSDEN.

In following the road from Parkes to Forbes, which is southerly about 20 miles, the following species were noticed:—*Callitris robusta* (White or Cypress Pine), *Casuarina Luehmanni* (Bull Oak), *Eremophila Mitchelli* (Budtha or Sandalwood), *Myoporum deserti* (Dogwood), *Eucalyptus melliodora* (Yellow Box), *E. Woollsiana* (Box), *E. hemiphloia* var. *albena* (White Box), *E. conica* (Apple Box), *E. rostrata* (River Red Gum) on Goobang Creek, and a few trees of the following three species, *Acacia Oswaldi*, *A. homalophylla* (Yarran), and *Pittosporum phillyraeoides*. One plant was found of an *Acacia* which resembles *A. acinacea*, Lindl., but in the absence of flowers and pods it has not been definitely identified.

On some ridges about three miles north-westerly from Parkes *Eucalyptus sideroxylon* (Ironbark), and *E. affinis*, Deane and Maiden (White Ironbark) may be found.

On reaching the Lachlan River at Forbes, *Casuarina Cunninghamiana*, Miq., (River Oak) is seen for the first time. This species invariably follows the banks of streams, and in deep valleys its dark green foliage is conspicuous for many miles, thereby serving to indicate to an observer in an elevated position the courses of rivers and large creeks. Most of our western rivers have two reliable species following along the water's edge. These are *C. Cunninghamiana* and *Eucalyptus rostrata*, their difference in allocation being that the former takes possession of



the higher portions of the stream, and the latter of the lower, but for very many miles they overlap. On the Lachlan River both species are represented from about 30 miles below Forbes up to about 30 miles above Cowra; thence the Oaks continue upwards and the Gums downwards. I have not been able to hear of any River Oak below Condobolin; the trees, even in the Forbes district, become fewer as the lower country is reached. The fact of their ceasing altogether is the more remarkable when it is remembered that every year there must be an enormous quantity of seed carried down by the stream. Probably the soil along the lower parts of the river is more of a salty nature than that at higher levels, as I have seen the water from mining shafts in the low country of the Lachlan district too salt to be used in the engine boilers employed at the batteries. It is also known that in drought times, at least in the Darling, the water becomes brackish and even salty from the inflow of brine springs along the bank of the river, and this may be the chief cause in preventing the growth of the Oak trees. The seeds germinate very readily in damp places, and in the cracks of an old log lying in the river I once counted 35 young trees varying from one to ten feet high. They would probably never mature, as the expanding roots would split the log, and the several parts would then be likely to be carried away by floods.

*C. Cunninghamiana* is usually a dioecious species, and on the upper parts of the Lachlan in the month of April, when standing on the hillsides overlooking the river, the trees bearing male flowers can be readily distinguished by their colour from those bearing female flowers. The same features may be noticed among the Hawkesbury valleys in July with one of the Forest Oaks, *C. suberosa*.

All our Casuarinas with the exception of *C. Cambagei* (Belah) have the common name of Oak, and yet they bear no outward resemblance to the *Quercus* family or well-known English Oak, differing both in bark and foliage. Still there is a tradition that the early English arrivals noticed a similarity in the wood through both species having medullary rays, and this feature suggested to



them the name of Oak for the Australian trees. The Belah, which has very inconspicuous rays, seems to have kept a distinct name, although it might, through its foliage, easily be confused with other Casuarinas.

*C. Cunninghamiana* is, so far as I have been able to observe, purely a fresh water tree, and must not be confused with the Swamp Oak, *C. glauca*, often found near salt water along the coast. The former, in addition to growing near fresh water, is generally an indication of good drinking water, while the latter, though usually on salt flats, will sometimes follow up fresh water creeks, but in such cases it often happens that the stream is sluggish and the water brackish. A remarkable instance of how trees are sometimes restricted to their proper conditions occurs at the head of Burrill Lake near Ulladulla. This inlet is chiefly supplied with ocean water, and in many places on the flats around its margin there are trees of *C. glauca* (Swamp Oak), which extend westward practically as far as the salt water goes, a distance of about four or five miles. At this point the lake assumes the form of a salt water river, which again narrows at a slightly higher level into a fresh water creek. Oak trees may be seen continuing up the fresh water stream, known as Woodstock Creek, for a distance of scarcely half a mile, but curiously these are not *C. glauca* at all, but *C. Cunninghamiana*, which with their finer branchlets and smaller fruits can easily be distinguished from the former species. Above the point where the Oaks cease the creek soon becomes smaller, and is scarcely what is considered large enough to boast of Oak trees, while below the River Oaks the water is salt. The nearest point to this at which *C. Cunninghamiana* may be found is on the Clyde River, about a dozen miles westerly across mountains exceeding 1000 feet high. The formation immediately surrounding the fresh water Oaks is plutonic, but the country drained by the head waters of the creek is Permo-Carboniferous. It has been suggested to me that possibly these few Oak trees are the surviving descendants of a once more numerous assemblage in prehistoric times. It is believed that there has been an alteration in the relative levels of the land



and sea on the east coast during recent geological times; and that the coast line formerly extended as far to the east as the edge of the continental shelf (the present 100 fathom line).\* In this case the land around Burrill was formerly higher, and the salt water would have been kept back at least some miles to the eastward. Under these conditions the present bed of Burrill would be occupied as a small fresh water river probably lined on both sides with River Oaks. As the alteration of level progressed the salt water would be likely to encroach and destroy all the fresh water Oaks except the few under discussion; and had the alteration continued longer even all trace of these might have disappeared. At the same time, too, the altered conditions would be likely to induce the westerly extension of the salt water Swamp Oak to its present limits.

There appears to be geological evidence to support this view, and I have collected fossils near the mouth of Burrill, at present water level, and similar ones again on the top of the Pigeon House, 2360 feet higher, and about a dozen miles to the westward, which prove the formation in both cases to be the same, viz., Permo-Carboniferous.

Altogether the case presents some interesting features, and is one in which the study of the geological changes might be assisted by a knowledge of botany (Plate xxxiii.).

*C. Cunninghamiana* is the common Oak tree found on the upper parts of most of the New South Wales rivers, and although it follows up the large creeks in their ramifications among the mountains it never leaves the vicinity of the stream, and is therefore never found on the hillsides among the Forest Oaks.

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\* See Prof. David's "Anniversary Address" to the Royal Society of New South Wales, May, 1896. Journ. and Proc. R. Soc. N.S.W., Vol. xxx., pp. 43, 48, 69.

Also a paper "On the Occurrence of a Submerged Forest with Remains of the Dugong at Shea's Creek, near Sydney." By R. Etheridge, Junr., Prof. David, and J. W. Grimshaw, *Op. cit.* pp. 160, 176, 178.



In following the Lachlan River from Forbes to Condobolin, which is westerly about 60 miles, the species chiefly seen are those which belong to river country. *Eucalyptus rostrata* and *E. melliodora* continue all the way. *E. conica* is plentiful. *E. Woollsiana* and *E. tereticornis* occur at intervals, while *E. tereticornis* var. *dealbata* is only seen where the hills come near the river as at Jemalong. This is the spot where it may be seen growing about 20 yards from the River Red Gum (*E. rostrata*), but showing no gradation towards that species (*vide* Part ii., p. 713). *E. populifolia* occurs some miles below Forbes, and this spot marks its most easterly limit on the Lachlan. *E. largiflorens* is met with a few miles above Condobolin, which denotes its most easterly point on the Lachlan. In travelling across from Forbes past Lake Cowal to the Murrumbidgee above Narrandera, this species was not seen again, but it extends south-westerly into Victoria and South Australia as well as northwards along the Darling and its tributaries, though seldom leaving the river or damp flat country. *E. sideroxylon* is never found in river country, consequently it is not noticed except on a ridge just north of Condobolin.

The Casuarinas noted were:—*C. Luehmanni*, *C. Cunninghamiana* and *C. Cambagei*. Other trees passed were:—*Callitris robusta*, *Heterodendron oleacefolium* (Rosewood), *Hakea leucoptera* (Needlewood), *Eremophila Mitchelli*, and *Pittosporum phillyræoides*, the last named being pointed out to me by several as the tree known by the aborigines as Berrigan or Barrigan. Its drooping foliage, always attractive, is beautified in the autumn by a considerable quantity of yellow fruit. Although this species may be found extending over a very large area in this and adjoining States, it always appeared to me to be scarce, and was generally noticed as a solitary tree. The reason of this is partly owing to its popularity as a fodder plant; and without conservation its extermination seems inevitable.

The Acacias are represented by *A. Oswaldi* (often called Dead Finish), *A. pendula* (Boree or Myall), *A. homalophylla*, *A. stenophylla*, *A. salicina* (Cooba), and the Silver Wattle *A. dealbata*.



Some trees of Cooba were noticed with a diameter of two feet. Only a few trees of *A. dealbata* were seen, but they were large and had the same silvery appearance that is so constant a feature on the highlands. In coming from Bourke these were the first of typical *A. dealbata* noticed. They were on the south side of the river at about 17 miles below Forbes, and were flowering in the first week in August, 1899. I have never seen any others within fifty miles of this spot.

From Forbes to Pinnacle Mines, a distance of about 20 miles southerly, the country is level, and only those species were seen which belong to the flat country. *Casuarina Cunninghamiana* is found only on the Lachlan close to Forbes, but *C. Luehmanni* and *C. Cambagei* are noticed at intervals along the roadside. *Myoporum deserti*, *Callitris robusta*, *Eremophila Mitchelli*, *Heterodendron olecefolium* and *Geijera parviflora* (Wilga) are also distributed throughout this stretch of country.

The Acacias noticed were:—*A. dealbata* (green variety), *A. homalophylla*, *A. Osvaldi* and *A. pendula* which is here and to the southward more generally known as Boree than Myall, the latter name, as well as Yarran, being often applied to *A. homalophylla*.

*Eucalyptus rostrata* is to be seen near the Lachlan and on many of the swamps to the southward. *E. melliodora*, *E. Woollisiana* and *E. conica* are common along this road, while *E. hemiphloia* var. *albens* is seen only when nearing the Pinnacle Mine on a slight rise.

About three miles south-easterly from the mine is a very conspicuous hill known as the Pinnacle Mountain, which may be distinctly seen from the top of Canoblas near Orange on a clear day. It appears to be an outlier of the Devonian period, though in the course of a walk across it I found no fossils to prove this. On the northern side it ends abruptly, forming a few small sandstone cliffs which look somewhat imposing when viewed from the surrounding plains. On approaching it from the western side the following trees and shrubs were seen:—*Casuarina Luehmanni*, *Callitris robusta* (plentiful), *Eremophila longifolia* (in limited



quantity), *Celastrus Cunninghamii* (a shrub), *Fusanus acuminatus* (Quandong), *Cassia eremophila*, *Eucalyptus melliodora*, *E. Wooll-siana*, *Acacia spectabilis*, *A. hakeoides* and *A. Oswaldi*. On ascending the Mount, *A. amblygona*, *A. doratoxylon* (Currawong), *Helichrysum* sp., *Caladenia cerulea*, *Eucalyptus tereticornis* var. *dealbata* (Mountain Gum), *Callitris calcarata* (Mountain Pine), and *Brachyloma daphnoides*, Benth., were noticed. The strong sweet-scented flowers of this last-named little shrub were plentiful the first week in September. Towards the north side are *Tecoma australis* (Bignonia), *Beyeria viscosa*, *Phyllanthus thymoides*, Sieb., and *Exocarpus cupressiformis* (Native Cherry). Other plants distributed about the top are *Grevillea floribunda*, *Calythrix tetragona*, Labill., *Dillwynia juniperina*, Sieb., *Zieria aspalathoides*, A. Cunn., *Casuarina quadrivalvis* (She Oak), and *Morchella conica*, Pers. This latter and other somewhat similar species of Fungi were known to the aborigines by the name of Merl. On the eastern side is *Eucalyptus hemiphloia* var. *albens*, also extending round to the south, where it is associated with *E. sideroxylon*. Wherever these two trees grow together, a third tree, which looks very much like a hybrid between them, may be expected. This is *E. affinis*, often called White Ironbark and sometimes Black Box. It was found here in company with the above trees.

This species has been under my notice for about ten years. It was first seen at Grenfell, and was then discussed with several bushmen, who all agreed that in outward appearance it seemed to show quite as much affinity to *E. hemiphloia* var. *albens* as to *E. sideroxylon*, but in working the timber they found the wood had more resemblance to the Ironbark than the Box. This testimony has since been supported by others. Outwardly it is in its lower part, where the bark is fairly rough, that the likeness to the Ironbark is seen; while the upper part, having a much smoother bark, suggests a relationship to the Box. The usual colour of the bark is brown, and by this alone it may generally be separated on sight from the other two species. When the bark is first removed it is found to have a greenish-yellow sap similar to the Ironbark, while that of the Box is white. The



timber is tougher than that of the Ironbark and not so dry, and is considered by many to be better for wheelwright's work than either the Ironbark or the Box. Its colour is lighter than that of the former and darker than that of the latter. The trees are never plentiful, and in a forest of *E. sideroxylon* the proportion would roughly be about 15 or 20 of the latter to one of *E. affinis*, but the proportion varies in different forests. In the western districts *E. sideroxylon* is generally found on ridges, while *E. hemiphloia* var. *albens* takes the sides and more open country as well, though the two species are often found growing side by side, and both flower about the months of April, May and June. As a general rule I have noticed that *E. affinis* is found growing close to *E. sideroxylon*, and is seldom out in the open with the Box, thus showing that it has a greater similarity, as regards habitat, to the former species. In its buds, fruits, bark and timber, it appears to be just about midway between the two species, and shows very little variation. In view of all its characteristics, I am strongly inclined to the opinion that the species is one of the newest Eucalypts, and has been evolved in some way from *E. sideroxylon*. Circumstantial evidence alone seems to point to the conclusion that the species is the result of hybridization, but it is of course quite impossible to speak with any certainty on the matter, for even if such were the case it would be almost impracticable to secure proof.

Messrs. Deane and Maiden have recently described a questionable hybrid, long known as a separate tree growing near Cabramatta, and named it *E. Boormani* (these Proceedings, 1901, xxvi., 339). This tree, though somewhat similar, would not generally be confused with *E. affinis*, as it shows such a strong affinity to *E. siderophloia* in addition to *E. hemiphloia*. The Ironbark-Box of Concord is also easily separated, as it shows an undoubted affinity to *E. paniculata*.

In most respects *E. affinis* is indistinguishable from the Ironbark-Box of Nymagee (mentioned in previous papers) except by the buds and fruits. As regards bark and timber, they appear to be identical. The fruits of the Nymagee tree are much



smaller, and if these trees are hybrids between *E. sideroxylon* and *E. Woollsiana*, the difference in size of fruits would be accounted for, as those of the latter are generally less than half the size of *E. hemiphloia* var. *albens*.

If *E. affinis* were originally produced by hybridization, it seems to be sufficiently well established now to propagate itself without assistance from other flowers, for on one occasion only I found a single tree of it when driving along a track through a forest of *E. sideroxylon* near Reefton in the Temora district. I had no time to examine either side of the road, and no trees of *E. hemiphloia* var. *albens* were in sight, though I afterwards found that they were plentiful on a ridge a few miles to the eastward, but cannot state the exact distance to the nearest tree.

*E. affinis* may be found on ridges near Dubbo, Wellington, Peak Hill, Molong, Parkes, Grenfell and Temora, and, like *E. sideroxylon*, has a decided preference for sedimentary formations.

In giving all the above particulars my object has been to make available any facts I have collected, without trying to prove any theories for or against hybridization. One thing undoubtedly seems evident, which is that the conditions which are favourable to the production of both *E. sideroxylon* and *E. hemiphloia* var. *albens* are also suitable to *E. affinis*.

In regard to the botany of the Pinnacle Mount, one feature noticed was the presence of more species of the coast flora than had been previously seen at any spot in coming from Bourke, representatives of the following genera being found for the first time:—*Brachyloma*, *Phyllanthus*, *Calythrix*, *Dillwynia* and *Zieria*. Some other coast forms found here have been mentioned in previous papers.

From Pinnacle Mountain to Marsden, near Lake Cowal, *via* Blink Bonnie, is about 30 miles south-westerly, being chiefly plain country. The trees and shrubs noticed were as follows:—*Eremophila Mitchelli*, *Heterodendron oleaefolium*, *Callitris robusta*, *Myoporum deserti*, *Pittosporum phillyraeoides*, *Geijera parviflora*, *Exocarpus aphylla* (Stiff or Jointy Cherry), *E. cupressiformis*, *Hakea leucoptera* (not plentiful), and *Apophyllum anomalum* (Warrior Bush), which was very scarce.



*Casuarina Luehmanni* was abundant along the first part of the road; *C. quadrivalvis* was noticed once about half-way on a porphyry hill near Mount Tallabung; and *C. Cambagei* (Belah) was plentiful along the latter half, clumps of its dense dark green foliage standing out conspicuously about the plains, which were otherwise partly silvered over with *Acacia pendula* (Boree).

The Acacias passed were:—*A. homalophylla*, *A. hakeoides*, *A. Oswaldi*, a little of *A. doratoxylon*, *A. decora*, which seems sure to be found where the formation is porphyry, *A. stenophylla* along the banks of the Bland Creek, and miles of *A. pendula*.

In crossing the plains one is impressed with Nature's successful efforts at landscape designing. An open plain of two or three miles extent is entered, which sometimes appears to be hemmed in with Belah and Boree, but in proceeding, openings are found which widen on approach. At first glimpses only are obtained through these spaces, and one is interested in trying to see what is beyond. Gradually there develop other plains, which are all connected, or perhaps should be considered as parts of one great design, artistically divided and decorated by the imposing dark green foliage of the Belah, or the graceful pendulous forms of the Boree.

The Eucalypts found between the Pinnacle and Marsden were *E. hemiphloia*, var. *albens* only at starting, *E. melliodora*, *E. Woollsiana*, *E. tereticornis* var. *dealbata*, *E. rostrata*, and *E. populifolia*, the last-named being only in the latter part and not plentiful. *E. conica* was not seen, although the conditions seemed often favourable, and its southern limit is beyond this point. Still it is not strongly represented south of here. *E. rostrata* was found along the banks of the Bland Creek above Lake Cowal, and also extending back on the flats.

Some specimens of *E. rostrata* were collected with buds having a partially double operculum, which is apparently a feature to be found on most Eucalypts if extended observations be made. It has occurred to me that these outer opercula (except in such cases as that of *E. maculata*, the Spotted Gum of the coast) have been formed from parts of the original bract or thin membrane which



in the early stage of inflorescence often encloses each cluster of buds. The covering referred to seems to be inside of the ordinary bracteoles which are usually seen around the buds, and much finer in texture. In most cases this covering is soon burst by the growing buds, and the fragments are blown away. A trace, however, is often left at the base, and may sometimes be seen around the pedicels, appearing as several small bracts. But in some cases the point of each bud appears to push forward into this covering bract, thereby causing it to assume a conical shape at each point of contact, and before breaking, it has capped the upper part of each operculum. For a time this cap appears to adhere and grow thicker, but gradually becomes dry and brown, when it readily catches the eye. It is then found to be simply resting on the true operculum, scarcely adhering, and can be removed by a gentle touch. In no case have I found it as long as the operculum proper, generally less than half. I have collected fairly advanced buds of *E. dives*, Schau., wholly enclosed in the bract, but in the handling and drying the structure was in consequence destroyed.

The above remarks are put forth tentatively, as owing to the delicate construction of the buds, and the somewhat uncommon occurrence of this outer operculum, it has been impossible to get a complete series of specimens to explain the phenomenon in a manner that would admit of no doubt, the stage requiring further investigation being the period between when the buds are wholly enclosed, and that at which the outcap begins to change colour.

Early in the year 1900 I was informed by a miner named Kelly who resides in the Grenfell district, that about fifteen years previously he had been a stockman near Lake Cowal, and had seen some trees near there which appeared unusual for the locality. He had also visited Queensland, and had seen there much of what he believed was the same species, which was called Brigalow. He moreover stated that he knew of no other such trees anywhere in the district, and that this clump consisted of one large tree and a number of little ones. Having obtained particulars of the locality, which is about  $3\frac{1}{2}$  miles west of



Marsden, I decided to visit the spot if fortune should ever take me in that direction. Later in the same year I had to pass through Marsden, so rode out to the locality indicated. The country consists of plains sparsely timbered with *Acacia pendula*, *Geijera parviflora*, *Hakea leucoptera*, *Casuarina Cambagei*, *Heterodendron oleaefolium*, *Eremophila Mitchellii*, *Eucalyptus Woollsiana*, and *E. populifolia*. When within about half a mile of my destination, an opening in the timber enabled me to see a cluster of shining leaves which had that characteristic sheen so well known by travellers among the Brigalow, and a closer inspection proved that the trees were *Acacia harpophylla*, F.v.M., as surmised. The fact of Brigalow growing in this locality is full of interest, as the species is chiefly a Queensland one, but comes into New South Wales in considerable quantity on the north, though thinning out as it extends southward, and occurring only in patches. The most southern patch, other than that under discussion, with which I am acquainted in the interior, is at Nyngan, and I have travelled considerably over the area included between Dandaloo, Nyngan, Nymagee, Mount Hope and Condobolin without ever having heard of it. The most southern point recorded for Brigalow is Scone, on the eastern watershed (*vide* previous paper, Part iii., p. 209). Marsden, which is almost due west of Sydney, is nearly 120 miles south of Scone (or 230 miles south-west), and 150 miles south of Nyngan.

Instead of finding one large tree surrounded by small ones, I found a cluster ranging from 10 to 30 feet high covering an area of nearly five acres. An enclosure roughly ten chains north and south by five chains east and west would include the whole clump. Most of the trees were very shapely, throwing out branches at a few feet from the ground. An east and west fence passes through the northern half. A search for the original tree resulted in the discovery of an old stump standing about 10 feet high, and two feet in diameter at the ground, though tapering considerably towards the top. This was situated about the centre of the extreme western edge, thus showing that the spread of seed from this tree must have been caused by winds



which blew chiefly from the westward, ranging from about N.N.W. to S.S.W. It is not usual for the easterly winds to penetrate so far into the interior, so the distribution is in the direction that might have been expected. How the first seed came there is a question most difficult to answer. It is known that the seeds of the *Acacia* family were used as food by the aborigines, who would perhaps sometimes carry them a distance for this purpose, notwithstanding their improvident nature. But owing to the very dry stretch of country between the Lachlan and the Bogan in the direction of the Brigalow country, I doubt if there was much communication between the aborigines of these districts, so that the solution of the question may not be here.

It is also known that the seeds of *Acacias* are enclosed in a very strong testa and preserve their germinating powers for very many years. Seeds are often distributed by birds, and the late Dr. Woolls in his "Lectures on the Vegetable Kingdom," points out that some are also frequently carried in the manes and tails of horses. This is a common occurrence in the western districts, where the seed vessels of many of the grasses and herbs occur as burrs, which have the effect of matting the manes and tails. However, in the present instance it must have been brought some considerable distance, possibly before horses had reached the neighbourhood, and there was a time when this original tree was the only one in the locality, thereby presenting an unusual feature. There is another method of distribution which may often account for trees being found in outlying situations, and that is distribution by wind. Whirlwinds are of common occurrence in the interior, acting quite independently of ordinary wind storms, and along the track which they happen to take they fairly sweep the ground of dust and leaves, &c. The noise made by the rustling of the material when being taken up in the spiral current may be heard a hundred yards off. It is not unusual to see a column of dust extending nearly a quarter of a mile upwards, and visible several miles off. In this way various kinds of seeds may be carried up, but the probability is that in most cases they



soon fall. Some, however, when attached to light substances of a suitable shape to be easily blown about, may get carried away in an upper current after being raised by the whirlwind. Many of the prevailing high winds in the interior come from a direction approximating the north-west, reaching the coast in the summer as hot winds; and besides the amount of matter raised by those winds alone, they are undoubtedly fed in a small way by whirlwinds. A careful study of the distribution of several species between the Bogan and Lachlan will show that the spread has been towards the south-east. Two species in particular may be mentioned as having travelled in this way, viz., *Acacia aneura* (Mulga) and *A. excelsa* (Ironwood). (*Vide* Part iv., p. 321). It is possible that there are small clumps of Brigalow nearer to Marsden than Nyngan. It may perhaps extend southward from Cobar, but if so, I am satisfied from the result of numerous enquiries made that it is rare. In fact it is scarce anywhere south of the Great Western Railway. I could find neither flowers nor pods the first week in September, and it is curious that various collectors have from time to time experienced a difficulty in getting complete specimens. When the species was first described the pod was said to be unknown, and this part of the description was only supplied by Messrs. Maiden and Betcher in 1899 (these Proceedings, 1899, Part iv.), although pods had been collected prior to this later date.

Another instance of this isolation was once noticed in the case of a Eucalypt which was not even supported by seedlings. In the year 1890 my assistant drew my attention to a tree growing about 10 miles west of the road from Young to Grenfell, at a point about midway between these two places. Mr. Quinn, the owner of the land upon which the tree grew, stated that it was the only one of its kind which he had ever seen, never having been in the interior, but a Western man had told him it was a Mallee and that no others were to be found within 50 miles of it. In 1892 I visited Cobar, and at once recognised one of the Cobar Mallees as being similar to the solitary tree near Grenfell. As I did not collect specimens from the Grenfell tree, I cannot speak



with certainty, but believe the species to be that which has since been described by Mr. Baker as *E. viridis*. I have also since travelled over most of the area between Grenfell and Wyalong, and have never met with any Mallee within 50 miles of this solitary tree.

Between Parkes, Condobolin and Marsden the total number of Eucalypts noticed was eleven, viz.:—*E. melliodora*, *E. Woollsiana*, *E. hemiphloia* var. *albens*, *E. sideroxylon*, *E. affinis*, *E. conica*, *E. tereticornis*, *E. tereticornis* var. *dealbata*, *E. rostrata*, *E. populifolia* (scarce), and *E. largiflorens* towards Condobolin.

No Mallees were seen within this area, the locality being rather too far east for them, and the country unsuitable through being made up chiefly of river formation,

The Acacias were represented by *A. homalophylla*, *A. pendula*, *A. hakeoides*, *A. decora* (scarce), *A. Oswaldi*, *A. doratoxylon*, *A. amblygona* (on Pinnacle Mountain only), *A. salicina*, *A. stenophylla*, *A. spectabilis* (scarce), *A. acinacea* (?), *A. harpophylla* (west of Marsden), *A. dealbata* (scarce), and *A. dealbata* (green variety).

The Casuarinas were :—*C. Cunninghamiana*, *C. Luehmanni*, *C. quadrivalvis* and *C. Cambagei*.

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#### EXPLANATION OF PLATES.

##### Plate xxxi.

Fig. 1.—*Acacia pendula*, A. Cunn., (Myall or Boree), Forbes, N.S.W.

Fig. 2 —*Acacia aneura*, F.v.M., (Mulga), Bourke, N.S.W.; *Geijera parviflora* (Wilga), on the left; *Grevillea striata* (Beefwood), a young tree on the right.

##### Plate xxxii.

Fig. 1.—*Heterodendron oleifolium* Desf., (Rosewcod), Forbes, N.S.W.

Fig. 2.—*Casuarina Luehmanni*, R. T. Baker (Bull Oak), Peak Hill, N.S.W.

##### Plate xxxiii.

*Casuarina glauca*, Sieb., on the right near salt water; *C. Cunninghamiana*, Miq., large trees in fresh water.